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***Comparison of Self-Esteem, Body Image, and Motives of Physical Activity in College Students in Group and Solo Exercise***

An Honors Thesis submitted in partial fulfillment of the requirements for Honors in *the College of Health and Human Sciences*.

By  
*Isabella Axelsson*

Under the mentorship of *Dr. Jody Langdon and Dr. Daniel Czech*

ABSTRACT

Previous research has shown significant differences in the intensity of exercise performance and perceived body image between individuals with and without an exercise partner (Plante et al., 2010). Little research has been found which has compared the psychological factors between those who exercise with a group class and those who exercise alone. The purpose of this research study was to compare self-esteem, body image, and physical activity motives between individuals who engage in group exercise and those who exercise alone. Participants included 126 college-aged students (31 males, 95 females) at a southeastern university who engaged in either group exercise classes (N = 40) or solo exercise (N = 86). Participants completed a battery of surveys that measured self-esteem, body esteem, and motives of physical activity: The Rosenberg Self-Esteem Scale, Body Esteem Scale, and Motives of Physical Activity-Revised Scale. Data was analyzed by t-tests for each subscale. Since no male participants participated in group fitness classes, comparisons were only made among the female participants. Results showed that there was no significant difference between the groups on any measured construct. These results are not consistent with previous literature on body esteem and performance, but do show the regardless of the exercise setting, college-age females had high levels of self-esteem and body-esteem. In conclusion, physical activity engagement in the areas of group exercise and solo exercise are both beneficial for maintaining higher levels of self-esteem, body esteem, and motives for physical activity within this small sample.

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## Table of Contents

<b>Introduction.....</b>	<b>6</b>
<b>Body Image vs. Self-Esteem.....</b>	<b>11</b>
<b>Enjoyment and Motivation.....</b>	<b>13</b>
<b>Purpose of the Study .....</b>	<b>14</b>
<b>Methodology .....</b>	<b>15</b>
<b>Participants .....</b>	<b>15</b>
<b>Instrumentation .....</b>	<b>16</b>
Demographic questions.....	16
Self-esteem.....	16
Body Esteem.....	16
Motives for Physical Activity.....	17
<b>Data Analysis .....</b>	<b>18</b>
<b>Results .....</b>	<b>19</b>
<b>Descriptives .....</b>	<b>19</b>
<b>Comparing Gender.....</b>	<b>19</b>
<b>Means Comparisons: Group vs. Solo Exercise .....</b>	<b>20</b>
<b>Discussion .....</b>	<b>21</b>
<b>Limitations .....</b>	<b>30</b>
<b>Conclusion.....</b>	<b>30</b>
<b>Review of Literature .....</b>	<b>31</b>
<b>Self-Esteem.....</b>	<b>31</b>
<b>Body Image .....</b>	<b>33</b>
<b>Group Fitness.....</b>	<b>35</b>
<b>Personality.....</b>	<b>39</b>
<b>Rate of Perceived Exertion .....</b>	<b>41</b>
<b>Motivation .....</b>	<b>42</b>
<b>Conclusion.....</b>	<b>44</b>
<b>References.....</b>	<b>46</b>
<i>Table 1 .....</i>	<i>52</i>
<i>Table 2 .....</i>	<i>54</i>
<i>Table 3 .....</i>	<i>55</i>

### **Abstract**

Previous research has shown significant differences in the intensity of exercise performance and perceived body image between individuals with and without an exercise partner (Plante et al., 2010). Little research has been found which has compared the psychological factors between those who exercise with a group class and those who exercise alone. The purpose of this research study was to compare self-esteem, body image, and physical activity motives between individuals who engage in group exercise and those who exercise alone. It was expected that self-esteem, motivation and body esteem would be significantly higher in those that participate in group exercise than those who exercise by themselves. Participants included 126 college-aged students (31 males, 95 females) at a southeastern university who engaged in either group exercise classes (N = 40) or solo exercise (N = 86). The majority of students were white, non-Hispanic (69.8%) and senior students (53.2%). Participants completed a battery of surveys that measured self-esteem, body esteem, and motives of physical activity: The Rosenberg Self-Esteem Scale, Body Esteem Scale, and Motives of Physical Activity-Revised Scale. Data was analyzed by t-tests for each subscale. Since no male participants participated in group fitness classes, comparisons were only made among the female participants. Results showed that there was no significant difference between the groups on any measured construct. Means for self-esteem, body esteem, and motives for physical activity were all similar and high. These results are not consistent with previous literature on body esteem and performance, but do show the regardless of the exercise setting, college-age females had high levels of self-esteem and body-esteem. Another interesting was the high levels of both intrinsic and extrinsic motives for physical activity. In conclusion, physical activity engagement in the areas of group exercise

and solo exercise are both beneficial for maintaining higher levels of self-esteem, body esteem, and motives for physical activity within this small sample.

## **Comparison of Self-Esteem, Body Image, and Motives of Physical Activity in College Students in Group and Solo Exercise**

### **Introduction**

There are over 5,500 people that attend Georgia Southern University's Recreational activity (RAC) center a day (Recreation.georgiasouthern.edu, 2017). While there are multiple sections of the RAC that allow these participants to engage in solo workouts with machines and free weights, there is also the opportunity to engage in group fitness classes. These classes consist of Zumba, Yoga, Barre, Awesome Abs, HIIT, Total Body Blast, Cycle, Pilates and many other formats. Out of the approximately 5,500 visitors a day, statistics from the months of August 15, 2016 to December 10, 2016 show that only 14,091 attended group fitness classes per semester. The data also indicates that males attend these group fitness classes far less than females. Overall, there is around 4% of students who participate in group fitness over other activities at the RAC. With the information learned through researching exercise and its cognitive and psychological effects, it is surprising to see that such a small number of students are receiving such benefits. The students who participate are more likely to receive these benefits, which included improved self-esteem, body esteem, and positive body image.

### **Self-Esteem and Body Esteem**

Self-esteem has been commonly defined as how one sees themselves viewed by others. Latha et. al. (2006) states self-esteem differently for men and women where men try to get self-esteem through "achievements, power status, and control" while women's self-esteem is said to be "based on desirability and attractiveness". Body esteem is a "dimension of general self-esteem" and is how comfortable one feels with their body (Franzoi & Shields, 1984). Related to this, body image is the image one has in their mind when thinking about their body (Latha et. al.,

2006). Both body esteem and body image represent how one feels about their body. Although there has been research conducted on how physical activity effects the levels of self-esteem, perceived body image, and motives for physical activity on college students, little attention has been paid to the effects of the fitness setting itself on those outcomes. Also, little has been investigated on body esteem specifically. The small amount of research that has been conducted in this area comparing fitness settings focuses on differences between group and solo workouts.

#### Group vs. Solo Exercise

Within the literature comparing group vs. solo workouts, there is a strong focus on cycling. Plante, Coscarelli, and Ford (2001) measured perception of physical fitness, social desirability or defensiveness, and momentary mood states on a sample of 136 male and female participants who were placed into groups where the first cycled alone, another would cycle with a partner while making conversation, and the last group cycled with a partner in complete silence. Results of the study showed a greater impact on the reduction in stress for the group who worked out with a partner rather than alone. Further, the group who cycled with a partner showed a positive relationship with their stress-reducing benefits. The study also found that those who cycled with a partner reported higher levels of fatigue and tiredness over those who cycled alone. Interestingly, this was not related to if they were talking to the partner or not. A study similar to the one above focused on individual's perceived exertion and fitness performance between three groups; college students that cycled alone, with a partner that was more conditioned, and with a partner that was less conditioned (Plante et al., 2010). Results showed that individuals would exercise at a level set by the mood of the environment. That is, those working out with a more conditioned individual would work to the level of their partner and would show higher ranges of pulse rate and exercise exertion than the other groups. It was reported that the group who biked



alone felt relaxed, calm, and enjoyed the exercise more than those who exercised with a partner. Interestingly enough, it should be noted that this specific study showed that the enjoyment level in the individuals who participated in the workout alone was higher than the other groups who had a partner. A possible reason for this could be that the participants who were biking with an individual felt they were holding back their highly conditioned partner or they felt held back by the lower conditioned partner. With regards to perceived exertion and enjoyment, Bartholomew and Miller (2002) found that there was a positive correlation with rate of perceived exertion and enjoyment in exercise. Their study, which included only women, indicated that the highest levels of this correlation were found in relation to aerobic step dance classes. Although this study shows a correlation with physical activity level and enjoyment, its sample was limited, as it only included women in an aerobic dance step class. However, it does show that there is a correlation with group exercise.

The results of these studies suggest that there is an influence on an individual's workout when a partner is involved or when the workout setting is altered. It is interesting to see that an individual is likely to work along with the mood that is set in the fitness environment (Plante et al., 2010). This is intriguing because it shows that the individual is willing to adjust to the challenge that is presented to them in that altered setting. Some individuals preferred working out alone, even though group exercise produced psychological benefits. It can be hypothesized from looking at this finding that group fitness classes that are upbeat and energetic such as Cycle or Zumba, will give the participant a more enjoyable workout than working out alone.

Revisiting the study by Plante et al. (2010), those who cycled without a partner felt calm, relaxed, and claimed to enjoy the workout more than those with a partner. Other than the idea that participants feeling that they may be putting their partners behind, it is possible that

personality traits may influence how individuals like to work out and how they best respond to exercise. For example, Tolea et. al. (2012) shows that there is a positive correlation with those who are high in extraversion and muscular strength. Those who were high in neuroticism, characterized as “emotional instability, anxiety-proneness, and negative affectivity” (Watson & Clark, 1984). were also lower in muscular strength. It must be taken into account that this study measured the muscular strength at the knee and that physical activity level was based on self-report. In contradiction, Morgan (1973, 1994) showed that neuroticism is linked to higher rate of perceived exertion during a workout. Coquart et. al. (2012) found no correlation to RPE and anxiety as well as no correlation to extraversion. These personality traits can present differently, with no two individuals having the same traits. Further, this shows that personality may have an effect on how one best enjoys their workout and what setting they prefer whether that is working out alone or working out with a group.

Dolan discusses the basics of group fitness classes and their benefits in his article, *Benefits of Group Exercise* (acsm.org, 2017). One of the many benefits of group exercise is the prescriptive and pre-planned exercises for the class. Instructors prepare and are ready to give modifications to participants who are not as skilled at creating their own workouts. In addition, group exercise can work well for individuals who lack personal motivation for exercise.

Although the participants in the Plante et al. (2010) study showed that setting an upbeat and good work out environment will “motivate” the individual, Altena (2010) discussed group fitness and how it promotes “companionship and accountability”. However, group exercise classes might not be suitable for all; some individuals might prefer the solitude of listening to their own music and working out at their own pace. This idea is supported in Tolea et al. (2012).

Although there has been little found, this line of research has indicated that the benefits of exercise can be greater for those who choose to work out with a partner or group. More specifically, Dehghanfar, Alicheshmealae, and Noorbakhsh (2014) found that individuals who engage in yoga significantly improved self-esteem, stress and emotional intelligence when compared to a control group who did not engage in yoga. Researchers in this study concluded that this difference could be due to the social nature of the yoga class, in addition to the regular benefits of exercise and being physically active. It should be noted that this study's sample was restricted to men only. Mackey (2013) sampled students who participated on group exercise classes. Although her sample size was very small and there was a high dropout rate during the period of the study, it was found that those who participated in yoga classes showed increased appearance-related body esteem while the cardio and strength group showed decreased appearance-related body esteem over time. The cardio and strength group reported significantly lower levels of appearance-related body esteem than the yoga group. This shows that there is something about going to these classes, especially yoga, that make the participants not feel those appearance goals.

A possible explanation for the results found by Mackey (2013) could be that yoga is a type of fitness modality that allows the participant to “develop inner awareness” and focus on the movement of the body and its abilities during that specific moment (Health.Harvard.edu). It is also stated that yoga is meant to deter those from worrying about their physical appearance which is why many yoga studios do not have mirrors. More importantly, there have been studies conducted that show those who practice yoga are “more satisfied and less critical of their bodies” than those who do not (Health.Harvard.edu). With cardio and strength training, the body is involved in activity that increases the heart rate, increases oxygen consumption and helps to

build endurance (acefitness.org). With cardio and strength classes such as Zumba and body conditioning classes, there are other people in the class that could be performing the dance routine more fluid or using a higher weight causing other participants to feel compared to others.

In a literature review by Harvey (2012), several physiological aspects of exercise were highlighted. With yoga specifically, a strong relationship was identified between decreased levels of blood pressure and increased levels of mental health. Along with Bartholomew and Miller (2002), Salamuddin, Harun, and Al-Rashed (2014) looked at a sample of female students and their level of self-esteem depending on the exercise program. Participants were placed in modalities of walking and jogging, aerobic step and dance, aerobic step and dance with weight training, and a control group who did not participate in physical activity. Results showed that the two groups who participated in the aerobic step and dance showed the highest levels of self-esteem. This means that those who engaged in the most involved and upbeat class, being the step dance class, showed the most improvement with self-esteem. Palmer (1995) shows the relationship between the physiological factors Harvey (2012) was referring to, such as diastolic blood pressure and resting heart rate, and related them to psychological factors, such as self-esteem and depression. Palmer (1995) looked at these variables and more with premenopausal women who were placed on an 8-week walking regiment and noticed that the walking group showed improvement in their walking time, their diastolic blood pressure levels, and rated self-esteem.

### **Body Image vs. Self-Esteem**

A study by Lowery (2005) looked at the relationship between body image, self-esteem, and health related behaviors in college students. Results showed that women were more affected by having negative perceived body image on their self-esteem than in men. Also, the more physically active the participants were the more positive body image they had. Therefore, the

greater the positive body image, the higher the self-esteem. Further, higher the self-esteem was positively related to body image, self-esteem, and physical activity level. This relationship between high physical activity and high self-esteem is also supported by Frost and Mckelvie (2004). In their study, students from all levels of schooling (elementary, middle, high school, and university) were measured and data was collected to see how physical activity affected self-esteem, body satisfaction, and body build. It was found that the students who were more active had higher self-esteem despite the age differences of the students. In contradiction to this, Staples (2015), who measured exercise and self-esteem, sleep patterns, anxiety, and energy levels, found no correlation between physical activity and self-esteem. It should be noted that this study in particular had a small sample size and physical activity levels were based on self-report. In reference to the body image relationship found by Lowery (2005), Fortman (2006) found a compelling relationship. This study addressed university students and the relationship between body image, self-esteem, and academic achievement. It was found that there was a relationship with females and self-esteem showing that the poorer their self-assessed body image was, the lower their self-esteem. This study also showed that there was no relationship shown from the self-assessment with males and perceived body image. In contrast, Hubbs, Doyle, Bowden, and Doyle (2012) found that there was zero correlation between self-esteem levels and physical activity levels when they measured a sample of college students. A possible reason for these contradicting studies could be due to the self-reported physical activity by the participants. It could be that they are claiming to be physically active when they truly are not or that they have a misinterpretation of how physically active they really need to be.

### **Enjoyment and Motivation**

Further exploring enjoyment in exercise, it is possible that it might be influenced by a participant's motivation in choosing to exercise, or their specific motives of physical activity. Molanorouzi, Khoo, and Morris (2015) analyzed how participation in physical activity could discriminate age, gender, or physical activity. Results showed that motives for participation of females were highest in appearance and physical condition while competition/ego and mastery were the motives highest in males. This study had a very wide age range from 20-64 and also had individuals participate in five different types of exercise which included, "individual racing sports plus bowls, team sports, racquet sports, martial arts, and exercise" (Molanorouzi, Khoo, and Morris 2015). When comparing the differences in motivation by age groups, younger adults 20-40 and middle aged 41-64, the younger adults were more concerned about affiliation, enjoyment with participation, and mastery while the older group was more concerned about physiological condition and the expectations of others. By observing that females are more concerned with their appearance in physical condition versus men, Turke (2012) showed that among females, there is no relationship between physical activity participation and self-esteem, but there is a positive correlation between participation and appearance motivation as well as a negative correlation between appearance motivation and self-esteem. The physical activity level in this study was based on self-report.

The evidence presented in the previous studies shows the instability of the research in this particular area. Many of these studies including Plante et. al. (2010), Plante, Coscarelli, and Ford (2001), and Dehghanfar, Alicheshmealae, and Noorbakhsh (2014), and Bartholomew and Miller (2002) measured how the students seemed to enjoy the workout within an altered fitness setting, whether it was with a group fitness class or a workout with a partner, and they seemed to show that the altered setting was enjoyed the most by the participants. The reason for this enjoyment

could be due to other outside influences. This requires a more in depth look at the relationship between self-esteem and body image, which could shed more light on how this affects an individual's workout. Motives for physical activity are another important consideration, as that might increase understanding about what motivates individuals and why they are working out.

**Purpose of the Study**

The fitness settings that the participants perform their workout needs to be further explored so that psychological factors, such as self-esteem, body esteem, and motives for physical activity can be evaluated. Therefore, the purpose of this study is to examine differences in body esteem, self-esteem and motives for physical activity in different fitness environments of college students in order to determine their variation. As seen from previously stated literature, there is a relationship between body image and self-esteem (Fortman 2006, Latha et.al.,2006, Lowery et. Al, 2006, and Strickland 2004) as well as a relationship between exercise and self-esteem (Dehganfar, Alicheshmealace and Noorbakhsh 2014 and Lowery et. Al, 2005) however Turke (2012) and Hubbs, Doyle, Bowden and Doyle (2012) found no relationship between physical activity participation and self-esteem. More research needs to be conducted to further investigate what type of exercise or type of fitness setting best helps improve these psychological factors.

## Methodology

### Participants

The participants for this study were full time college students taking at least 12 credit hours at Georgia Southern University. There was lack of diversification with the participants involved in the study since participants were taken from either Exercise Science lecture classes or at the University gym (RAC). These students were physically active by participating in at least 150 minutes of moderately intense exercise every week (acsm.org, year?) and regularly engaged in activities at the RAC, as determined by self-report. The students must have had to participate in either solo workout at the RAC or group exercise classes at the RAC. This study involved the distribution of paper surveys to participants in person. The total number of participants was 126 (24.6% males and 75.4% females) however, 3 participants preferred not to answer critical questions related to gender and were taken out of the final analysis and discussion. The mean age was 20.61 (SD = 1.61). For race, 19.8% were Black Non-Hispanic, 1.6% were Hispanic, 69.8% for White Non-Hispanic, .8% for Non-resident alien, 1.6% for Other/Unknown, and 6.3% for Multicultural. Students' year in school was also collected, showing a percentage of 7.9% freshman, 15.9% sophomores, 23.0% juniors, and 53.2% seniors. Relationship status among students indicated that 76.2% of participants were single not married, .8% were married, 5.6% were living with partner, 16.7% were not single but not married, and .8% preferred not to answer. There were 42.1% of participants that attended the university gym 0-2 days a week, 29.4% that attended 2-4 days a week, 21.4% that attended 4-6 days a week, and 7.1% that attended 6 or more days a week. In terms of level of physical activity, 27.8% were slightly physically active (1-2 days a week), 40.5% were moderately physically active (3-5 days a week), and 28.6% were very physically active (5-7 days a week). Among participants, 24.6% got 3-6 hours a night while 73.8% got 6-9 hours. Out of the entire sample, 31.7% participated in group



exercise while 68.3% participated in solo exercise. Other demographic information about participants can be found in Table 1.

### **Instrumentation**

**Demographic questions.** Participants were asked to report their age, race, ethnicity, gender, year in school, relationship status, how many times a week they visit the RAC, physical activity levels, and hours of sleep per night.

**Self-esteem.** The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965), was used to measure participants' global self-worth. It consists of 10 items that the participant will answer. The subscales consist of 5 positive thinking statements (e.g., "I take a positive attitude toward myself") and 5 negative thinking statements (e.g., "I certainly feel useless at times"). Items are rated on a 4 point Likert scale, ranging for 1 (strongly disagree) to 4 (strongly agree) and summed, with a total possible score of 30. The higher the score, the higher the self-esteem in the participant, with a score of 15 or lower indicating low self-esteem. Dobson et al. (1979) tested the scale's validity and reliability, finding sufficient internal consistency (Cronbach's  $\alpha = .77$ ). Test-retest reliability over a single week was reported by Fleming and Courtney (1984), finding the correlation of .82 with their large sample of 259 subjects, both male and female. Fleming and Courtney (1984) found convergent validity with anxiety, showing a correlation of -.64 and -.54 with depression. Further, high positive correlations ( $r = .78$ ) with general self-regard, .51 with social confidence and .66 with physical appearance. In the current study, Cronbach's alpha showed favorable reliability (Cronbach's  $\alpha = .85$ ).

**Body Esteem.** To measure body esteem, the Body Esteem Scale (BES; Franzoi and Shields, 1984) will be used. It consists of 35 items that state a body part of function such as cheekbones or body scent. The scale measures the constructs of body appearance, weight satisfaction and evaluations attributed to others about one's body appearance. In addition, there

are subscales that are individualized between the men and women. For men, there is physical attractiveness and for females there is sexual attractiveness. For males, there is upper body strength and for females there is weight concern. For males and females there is physical condition. These factors were found to have high loadings between males and females via factor analysis. This scale is rates using a Likert scale each question allowing the participant to choose 1-5, one being having strong negative feelings and 5 being having strong positive feelings. An example of physical condition and weight concern would be asking the participant to rate their thighs, while an example of upper body strength would be asking the participant to rate chest or breasts. A question relating to physical attractiveness and sexual attractiveness would be asking the participant to rate their cheeks/cheekbones. An example of physical condition would be to ask the participant to rate their energy level. The scale is scored by adding up the score for each subscale. The higher the score, the more positive body esteem they have in that subscale. Cronbach's alpha for this scale for males was .81 for the subscale of attractiveness, .85 for upper body strength subscale, and .86 for the subscale of general physical condition (Franzoi and Shields, 1984). For females, the Cronbach's alpha for the subscales attractiveness, weight concern, and general physical condition were .78, .87, and .82, respectively (Franzoi and Shields, 1984). Convergent validity measures showed a moderate correlation with self-esteem and each of the three subscales except for the weight concern subscale in females. In this current study, Cronbach's alpha showed favorable reliability. For females, Cronbach's alpha for attractiveness was .86, for physical condition .85, and for weight concern, .87. For males, Cronbach's alpha was .89 for physical condition, .92 for attractiveness, and .87 for upper body strength.

**Motives for Physical Activity.** To measure motives for physical activity, the Motives for Physical Activity Measure-Revised (MPAM-R; Ryan et al., 1997) scale was used. This scale

consists of 30 items. The subscales for this measure are interest/enjoyment, competence, appearance, fitness, and social. An example of social would be asking the participant to rate, “because my friends want me to” and asking about appearance would have the participant to rate, “because I want to improve my body shape”. For competence, the participant would rate, “because I want to improve existing skills”. A question for the fitness subscale would be asking the participant to rate, “because I want to improve my cardiovascular fitness” and an example of measuring interest would be asking the participant to rate, “because I think it’s interesting”. This scale uses a 7-point Likert scale, with 1 being “not true at all for me” and 7 being “very true for me”. It is scored by taking the average of each question that pertains to each subscale. Each subscale for the MPAM-R has demonstrated sufficient internal consistency, with alpha levels ranging from .74-.93 (Langdon et al., 2013). Similar results can be found by research conducted by Fredrick and Ryan (1997), which also shows a positive correlation between the five subscales and average workout enjoyment. In this current study, Cronbach’s alpha showed favorable reliability for each subscale. Cronbach’s alpha was .90 for interest and enjoyment, .93 for competence, .76 for appearance, .81 for fitness, and .85 for social.

### **Data Analysis**

Variables measured in this study were self-esteem, body esteem, and motives for physical activity. All variables of interest and demographic characteristics were evaluated for normality by evaluating skewness and kurtosis. In addition, scale reliability was calculated for all measures. Then, nine t-tests were used to evaluate differences in self-esteem, physical attractiveness (PA), Sexual Attractiveness (PC), Upper Body Strength (UBS), Weight Concern (WC), Physical Condition (PC), interest/enjoyment, competence, appearance, fitness, and social motives between individuals engaging in solo workouts, group fitness, and both types of workouts. Alpha level was set to .05.

## Results

### Descriptives

All males in the sample, 31, reported only engaging in solo exercise. In total, 51 participants claimed to be moderately active participating in physical activity 3-5 days a week. The majority of participants, 97, claimed to be single and without a partner. Further, 53 participants claimed to spend only 0-2 days a week at the university gym while only 39 claimed to be physically inactive and spend 1-2 days a week exercising.

In terms of general levels of self-esteem, most individuals indicated high self-esteem. The average score for males was 29.52 (SD = 3.35) and 27.94 for females (SD = 4.09) out of 30. All remaining means and standard deviations by gender are located in Table 2.

### Comparing Gender

Since the body esteem measure has separate constructs for males and females, all variables were analyzed separately by gender. Results of comparisons between males and females showed that both groups had very similar means and standard deviations of all constructs measured. Self-esteem showed no significant difference between genders,  $t(124) = 1.93$ ,  $p = .055$ , with females having similar self-esteem to males. Physical condition between males and females showed the greatest difference,  $M = 31.44$  (SD = 6.17) for females while males showed  $M = 50.65$  (SD = 8.38). Sexual attractiveness in females showed  $M = 48.18$  (SD = 7.20), Physical attractiveness in males showed  $M = 42.52$  (SD = 7.86). Weight concern in females showed  $M = 32.19$  (SD = 7.69) while upper body strength in males showed 35.71 (SD = 5.91). Interest-Enjoyment showed no major difference between males and females,  $t(124) = 2.58$ ,  $p = .011$ , with females reporting a mean of 5.30 (SD = 1.19), and males reporting a mean of 5.93 (SD = 1.11). Competence showed no significant difference between males and females,  $t(124) = 1.56$ ,  $p = .120$ , with males reporting a mean of  $M = 5.78$  (SD = 1.42), and females reporting a mean of  $M = 5.36$  (SD = 1.24). Appearance showed no significant difference between males and

females,  $t(124) = .0$ ,  $p = 1.0$ , with females reporting a mean of  $M = 5.88$  ( $SD = .92$ ), and males reporting a mean of  $M = 5.88$  ( $SD = .85$ ). Fitness showed no significant difference between males and females,  $t(124) = .55$ ,  $p = .582$ , with females reporting a mean of  $M = 6.09$  ( $SD = .78$ ), and with males reporting a mean of  $M = 6.18$  ( $SD = .94$ ). Social showed no significant difference between males and females  $t(124) = .57$ ,  $p = .568$ , with females reporting a mean of  $M = 4.22$  ( $SD = 1.44$ ), and males reporting a mean of  $M = 4.40$  ( $SD = 1.65$ ).

### **Means Comparisons: Group vs. Solo Exercise**

Within the data, no males reported participation in group exercise. Due to this, only females were included in the analysis. All remaining means and standard deviations for main analysis of females can be found in Table 3. Physical conditioning between females group and solo exercise showed no significant differences,  $t(93) = -1.38$ ,  $p = .172$ . Mean levels for both groups were relatively high. Self-esteem showed no significant differences between participants,  $t(93) = -.74$ ,  $p = .459$ . Sexual attractiveness showed no significant differences between participants  $t(93) = -.27$ ,  $p = .790$ . Mean levels for both groups were relatively high. Weight concern showed no significant differences between participants  $t(93) = .28$ ,  $p = .780$ . Mean levels for both groups were relatively high. Competence showed no significant differences between participants,  $t(93) = -.96$ ,  $p = .342$ , with mean levels for both groups being relatively high. Further, appearance showed no statistical significance among participants,  $t(62.76) = -1.5$ ,  $p = .127$ . Mean levels for both groups were relatively high. Fitness showed no significant differences among participants  $t(93) = -.19$ ,  $p = .853$ , with high mean levels reported for both groups. Finally, for social motives, no significant differences were noted between groups,  $t(93) = 1.40$ ,  $p = .178$ . Mean levels for both groups were relatively high. For interest-enjoyment, no significant differences were noted between participants  $t(93) = -.80$ ,  $p = .424$ . Mean levels for both groups were relatively high.

### **Discussion**

The purpose of this research study was to compare self-esteem, body image, and physical activity motives between individuals who experience group exercise and those who exercise alone. Also, since little research was found on group exercise a secondary purpose was to contribute to the literature in this area. Generally speaking, it was found that all constructs measured were relatively high and similar between genders and between group and solo exercise. Self-esteem in males and females were very high.

Although there were no significant differences found when groups were compared, the current study has studied an important population and analyzed the possible reasons for their psychological perspectives on fitness. Group exercise is an important area in the fitness industry but little is known about its effects or contribution to participants. The current study shed some light on the topic and could potentially push for the application of more research.

In the current study, measurement of self-esteem among participants showed very high means, indicating that participants “On the whole, I am satisfied with myself,” regardless of group membership. Self-esteem was high in males and females as well as in female groups of group exercise and solo, indicating that participants took “a positive attitude” toward themselves. This could be due to the similar environment the sample was taken from which tended to be fitness oriented. Lowery et. al. (2005) found that in both genders, the more physically active the individual the more positive body image and self-esteem. This relates to the current study since a majority of participants were physically active. Similarly, Fortman (2006) surveyed college students and found that those who had poor perceived body image had lower self-esteem. Based on these studies, since a majority of the sample taken was out of a very active environment and majority of the sample was moderately and very physically active, it was expected that means for

self-esteem and subscales for the body esteem scale for both males and females would have been high.

Latha et. al. (2006) states that womens' self-esteem is said to derive from attractiveness as well as desirability whereas males derive self-esteem from power status, control and achievements. Comparing results from this study to the current study, this supports the results of the current study which showed relatively high means for sexual attractiveness in females. However, there were no differences in sexual attractiveness when group and solo exercise groups were compared. This could be because both groups had high self-esteem which shows there was not much negative perceived body image among females in either group. However, some research has found a negative correlation between high levels of physical activity and levels of self-esteem (Strickland 2004) while others have found no correlation (Hubbs & Doyle, 2012 Staples, 2015) or a positive correlation (Lowery et al. 2005). This lack of consistency in past research makes explanation of results difficult. This could be due to the difference in samples taken from these studies or because more research needs to be conducted in this area.

For body esteem, results showed no significant difference between genders or between group and solo exercise. However, males did show an overall slightly higher mean than females did. This could be that females are not engaging in exercise modalities that have as high an intensity or impact as the ones males engage in. This could also be because males tend to be more highly motivated by competition and mastery rather than body image motivation (Molanorouzi, Khoo, and Morris, 2015) which would potentially cause males to work out more to compete with those in their social group. As for group and solo exercise, no significant difference was found and means were relatively similar. This could be due to the lack of diversification in the sample since participants were taken from either Exercise Science lecture

courses or inside the University gym. Also both groups engaging in similar exercises with or without a group. These factors could also possibly explain why means were so similar for sexual attractiveness and weight concern in group and solo exercise.

When measuring physical conditioning in the current study, results showed lack of significant difference between genders and between female group and solo exercise as well as high means. This shows that participants indicated positive ratings on characteristics such as of themselves that represented physical conditioning such as, “agility” and “reflexes”. Despite the different workout or workout environment, participants showed high levels of feeling confident in their conditioning status. The lack of significant difference in physical conditioning between group and solo exercise could be because the intensity of group exercise classes taken by females were less than the intensity of the solo workouts participants engaged in. If a significant difference was found in physical conditioning then participants might have felt less in shape than those who worked out by themselves. To further support this concept, Plante et al. (2010) investigated the effects of exercising with another individual, not specifically group fitness, however their results showed that those who work out with another individual will work out to the level of that individual. Those who worked out alone felt relaxed and more calm than those who worked out with another person. If that individual was a higher level of physical fitness than the participant would work out at their level. This supports the idea that due to group exercise classes being filled with participants of many different fitness levels there should have been a statistical difference of perceived physical conditioning between the two groups. However, there is also a diversity of people with different fitness levels that work out in the open gym setting as well. Also, participants in group exercise classes may not have felt as if they were pushed to their full potential or solo exercisers could be engaging in very high intensity exercises or working



different muscle groups, for example, Yoga versus Cross-fit training. There was a difference in means between males and females however. This could be because all males in the current study reported solo workout versus group exercise. Intensity might also help explain the difference in upper body strength and weight concern between genders. Measuring upper body strength/weight concern showed no significant differences between genders or between female group and solo exercise groups. This suggests that participants indicated positive ratings for features such as “biceps” or “muscular strength” for upper body strength in males or “body build” or “appetite” for weight concern in females. This suggests that regardless of the workout performed or workout environment performed in, the participants showed high levels of feeling attractive. The intensity of the classes may not be enough or work the muscle groups that cater to males considering the mean in upper body strength was slightly higher than females. A study conducted by Ljubojevic, Jovanovic, Zrnic, and Sebic (2016) looked at the fat reduction in women who participated in an 8 week Zumba program. Their results showed that there was a significant difference and increase in fat reduction in the group that engaged in Zumba compared to the group that did not exercise and stayed with their normal daily routine. Although the specific group fitness class that students participated in was not measured, it is interesting to see there is hardly a difference between the two means. To support this point, Wickham, Mullen, Whyte and Cannon (2017) looked at 3 specific types of group fitness modalities and looked at physiological factors such as heart rate and energy expenditure. Results showed that out of the classes measured, the cycle and aerobic step showed the highest increase in rate of intensity versus the resistance modalities.

Although the sample of males was small compared to females, this could shed some light of the perspective males may have of group exercise classes. The current study shows that no

males self-reported participating in group exercise classes whether that is simply because of the small sample size or other factors. This current study shows that for some reason, males are not attending group exercise classes. Possible reason why could be embarrassment to engage in classes due to social pressure from peers, classes offered may lack intensity desired, or classes offered may not cater to males as much as females. To further investigate, future research should survey why males choose not to attend.

When measuring physical attractiveness/sexual attractiveness among participants, high means were shown indicating that participants felt confident with features such as “chin” or “sex organs”. There was not a large enough difference in means between genders to consider significance for physical attractiveness/sexual attractiveness. Females were slightly higher which could be due to their tendency to be more body conscious. Since no significant differences were found between females in group and solo exercise classes, this suggests that regardless of the workout modality participants chose to engage in they could feel highly sexually attractive. Frederick and Ryan (1993) although looking at motivational aspects, found that females tend to lean toward body-related areas of motivation. Also, since females and males both had high self-esteem levels this could be that they both have a more positive perceived body image. No significant differences were found in sexual attractiveness between group and solo exercise. This could be because both had high self-esteem which shows there was not much negative perceived body image among participants in either group. Past research supports this (Latha et. al., 2006) since self-esteem from females potentially derives from attractiveness and self-esteem levels were significantly high. Since self-esteem levels were very high in both males and females and Lowery et. al (2005) show that as physical activity increases there will be a decrease in negative perceived body image which will affect self-esteem, the assumption can be made that since the

current study shows most participants are already high in self-esteem they do not have much negative perceived body images. Frederick and Ryan (1993) found that those who engage in personal fitness rather than sports will show higher motivation body-related areas. Although these variables were not measured for participants in the current study, this could be relatable if all males in the study only worked on personal fitness and not sports showing a higher concern and motivation for body-related areas. It was also found that females expressed higher body related concerns than men.

If body esteem was further researched, it would be beneficial to add to the literature a study that measured how long each participant had been working out and compare this to the subscales of body esteem. Specifically, upper body strength/weight concern and physical/sexual attractiveness since both males and females were significantly high and close to each other for these subscales. It would also be interesting to measure what variables of their environment was similar. There was also a large amount of females that reported only attending the university gym 0-4 days a week, however majority also reported being either slightly or moderately physically active. The small amount of males in the sample make it difficult to compare to females in this case however, majority of males reported being very physically active. Molanorouzi, Khoo, and Morris (2015) had a large sample of males and females in their study and found that females are higher in appearance motivation and physical condition than males. The males showed higher results in the competition/ego area. It could have been expected that females would have been higher due to the current study however many factors are to be considered.

Results of the analysis on motives for physical activity showed no significant difference between genders or between group and solo exercise. Means were relatively similar for all groups measured for all subscales. This again, could be due to the small sample size and the lack

of diversification between participants. Frederick and Ryan (1993) found that those who engage in personal fitness rather than sports will have higher body-related motivation whereas those who engage in sports will have higher interest-enjoyment and competence motivation. When looking at interest-enjoyment in the current study, participants showed high means by indicating that they engaged in either solo or group exercise classes “because it’s fun” suggesting that despite the type of workout environment they are finding interest and enjoyment. There was no significant difference in interest-enjoyment in group or solo exercise which could be since specific modalities of exercises engaged in were not measured. When measuring competence in the current study, high means were seen among participants by indicating that are engaging in either group or solo exercise workouts “because I want to obtain new skills”. This suggests that regardless of the type of workout the participant is involved with, they are showing high levels of wanting to achieve success. There was no difference found between males and females and levels of competence. Participants were asked to rate statements such as “because I want to obtain new skills” in order to measure competence. The lack of difference between groups could again be because no measures were taken in the current study to differentiate between sports and personal fitness. For this reason, it is difficult to explain the lack of significant difference found in competence. However, the study conducted by Frederick and Ryan (1993) could further explain differences if there were any. The study showing that those who were primarily involved with sports were higher in interest-enjoyment and competence motivation than the personal exercisers where personal exercisers were higher in body related motivation. Since the current study did not differentiate there could have been some participants that counted their sports as their personal exercise.

When measuring fitness motivation, no significant difference was found for fitness motivation between males and females or between female group or solo exercise groups. High means were also shown suggesting that regardless of the exercise performed participants indicated they engaged in the workout “because I want to be physically fit”. (Molanorouzi, Khoo & Morris, 2015) states that males tend to be motivated with mastery, competition, and ego. Latha et. al. (2006) states that male’s self-esteem comes from power status, achievement, and control. Females in both these studies lean towards appearance related areas which would support the lack of difference between groups in the current study. No measures were taken in the current study to determine what participants specifically engaged in in order to become motivated by fitness however, it can be assumed that both genders are both motivated to become physically fit in different ways; females being more motivated to get fit in order to have better appearance and males being more motivated to get fit as a competition and achievement aspect. The results of a study conducted by Strickland (2004) that looked at female college students showed that there was a positive correlation between exercise level and fitness self-evaluation. Since a large portion of the females were either moderately physically active and very physically active, this could be why there was no significant difference in fitness motivation between group exercise and solo exercise levels of fitness. Further research should be looked at comparing self-esteem levels and fitness motivation among participants in college settings.

There were no significant differences found in social motivation between genders or female groups of group and solo exercise. Despite social motives, participants in group and solo exercise indicated that they did so “because I want to be with my friends”. Results showed a lack of significance which could indicate that participants are engaging in social activities regardless of the mode of exercise. Turke (2012) found that in female college students, they will be more

motivated to work out if they are with a friend or loved one. This is interesting since results showed that there was no significant difference between group exercise and solo exercise for social motives. However, this could be that those who work out solo might also workout side by side with a friend or loved one and just not participate in group exercise classes. Altena (2011) states that if there is a lack of motivation among individuals who work out alone then implementing group, friends, or competition into the workout may help increase that motivation. Although the type of group exercise class was not measured, these results are interesting when compared to the study conducted by Nieri and Hughes (2016) which found that females enjoy group exercise, specifically Zumba, because they did not feel pressured or stressed. The social aspect of group exercise could be in some way related to the social aspect of sports which would affect interest-enjoyment motivation as discussed earlier with Fredrick and Ryan (1993).

The current study also measured appearance motivation and found that those who are more physically active will have higher appearance motivation. Measuring appearance motivation showed that regardless of the fitness setting the workout was performed in or the specific workout performed, participants did so “because I want to improve my appearance”. This could be because once the participant starts working out they enjoy the new body changes and continue towards that goal. However, further research should be conducted looking at the participant’s goal before starting the fitness program and comparing it to levels of social motives. Since a majority of males and females reported being moderately physically active and very physically active, we can assume, based on past research, that this group had relatively positive perceived body image which would cause their appearance motivation to be relatively high. Since both groups reported high levels of physical activity it is reasonable that there was no significant difference between gender. Also, means for both male and female were both  $M=5.88$ .

This could be due to the collection of participants being in similar environments. In addition to information about social motives, Turke (2012) found that those who are more physically active will have higher appearance motivation. Disregarding all other possible factors, this research supports that idea since both groups had a high level of self-reported physical activity along with high levels of appearance motivation. Molanorouzi, Khoo, and Morris (2015) had a large sample of males and females in their study and found that females are higher in appearance motivation than males are. Due to their large and reliable sample, it would have been expected that females would have been higher than males however the sample size in the current study was relatively small and low in diversity.

**Limitations**

Limitations of the current study include the sample size. There were only 126 participants in the current study. A larger sample would have allowed for better analysis of results. Another limitation would be the distribution of males and females as well as group exercise and solo exercise participants. Majority of participants were solo exercise and female. No males reported participating in group exercise. The sample was taken from a fitness oriented environment. The study would have benefited by having a diversity in the sample. The researcher also did not measure the specific exercise in which each participant engaged in.

**Conclusion**

This study will be beneficial by adding to the line of research in this area, which can be used by institutions such as the RAC to help find the best way to get college students more active in the most efficient ways possible. Very little research has been found on group versus solo exercise comparisons. Most studies that have focused on physiological factors, yet no prominent research has been found. This is an important field for the fitness industry that, if further investigated, could possibly lead to better understanding exercise behavior.

## **Review of Literature**

### **Self-Esteem**

In the study conducted by Staples (2015), 200 participants between the ages of 18 and 63 were studied, determining the relationships between exercise and self-esteem, sleep patterns, anxiety, and energy levels. The study was conducted by handing the participants a series of four questionnaires, two of which were developed by the researcher and the other two being the Rosenberg (1965) self-esteem scale and Leary's (1983) Fear of negative evaluation scale. The study showed that there was no significant correlation between physical activity and self-esteem levels. Fortman (2006) study consisted of 92 students at Ohio State University (37 males and 55 females). The purpose of this study was to see if there was a relationship between body image, self-esteem and academic achievement. The study was conducted by handing the participants 9 questionnaires which consisted of The self-efficiency scale, The new general self-efficiency scale, the Rosenberg Self-esteem scale, the objectified Body Composition scale, the Body Esteem scale, sex appropriate version of the Sociocultural Attitudes Towards Appearance scale, and several others. Fortman (2006) hypothesized that body image would have an effect on self-assessments and academic achievement in females. The research showed that with females there was a relationship between body image, self-worth and self-esteem. It was stated that, "Poor body image also results in lower self-esteem in women" (Fortman, 2006). Findings also showed that body image in males was not affected by their self-assessments. Hubbs and Doyle (2012) looked at the relationship between physical activity, self-esteem and stress levels. There was a sample of 90 students enrolled at Baylor University and had them complete the Rosenberg Self-esteem questionnaire, the perceived stress scale and the international physical activity questionnaire. The study found no correlation between physical activity and self-esteem. However, there was a negative correlation between self-esteem and stress with men and a



significant correlation between perceived stress and self-esteem in women. This study also cites another study which states that high stress amount females in college have shown to have a relationship with lower self-esteem levels (Hayman et. Al., 2007). Latha, Hegde, Bhat, Sharma and Rai (2006) looked at the relationship between the BMI and self-perception of a female's body image and their self-esteem and depression levels. The study took a sample of 124 female college students between the ages of 16-21. In order to conduct the study, researchers gathered basic information about the individuals as well as clinical history. The researchers also asked about emphasis on physical appearance as well as the family preference of healthy eating and lifestyle. BMI was taken and the individuals were then placed into groups of underweight (less than 18), normal (18-24.99), and overweight (25 and above). The body Shape questionnaire, Rosenberg Self-esteem scale, and General health questionnaire were given to the patrons to complete. The study did not find a correlation between BMI, depression, or self-esteem however, this study did not have any obese individuals and the sample was very limited. The groups placed in their BMI categories did not vary when it came to place or origin, family income or family type, height, or history of illness. Lowery et. Al. (2005) took 267 females and 156 males which data was collected from in order to determine a relationship between body image, self-esteem, and health related behaviors. These students were first year college students. They were given a demographic sheet, the Objectified Body Consciousness Scale, the Rosenberg Self-Esteem Scale, the Weight and Appearance Visual Analogue Scales, and the Contour Drawing Rating Scale. It was found that negative body image had an effect on self-esteem in females and that women exhibited having a negative body image more than men showed. This study also found that in both men and women, the more physically active they are the more positive body image and self-esteem will be shown. For regular exercise, there was a more positive body image

and self-esteem in both men and women. Even the more physically active women had a lower self-esteem and body image than men showed. Strickland (2004) looked at a group of women in college who were physically active and a group who were less physically active and compared their levels of self-esteem and their perceived body image. The scales used to measure these variables were the Multidimensional Body-Self Relations Questionnaire and the Rosenberg Self-Esteem Scale. Results of this study found that there was a positive relationship between “exercise level and fitness self-evaluation, fitness orientation, health self-evaluation and health orientation” as well as a negative relationship between exercise level and self-esteem (Strickland, 2004). A study conducted by Van den Berg, Mond, Eisenberg, Ackard, and Neumark-Sztainer (2010) looked at the comparison of body dissatisfaction and low self-esteem of 11-18 year olds. One significantly different aspect of this study was that participants were asked to complete the survey and measurements twice, the second time being 5 years later with a total sample size of 2,516 however results from time 1 and time two were analyzed separately. The Rosenberg Self-Esteem Scale, Body Shape Satisfaction Scale, BMI and demographics were used to measure participants. Results showed that body dissatisfaction and low self-esteem aspect was strong and did not differ between boys or girls or between middle school and high school groups. The association between body dissatisfaction and self-esteem did not change in strength the by the time the second survey was taken. Although this study was primarily focused on eating disorders and the association with a diverse socio-economic sample, this study shows the importance of educating and promoting exercise and healthy lifestyles in young adolescents.

### **Body Image**

A study conducted by Hubbard (2013) looked at the effects of different exercise modalities on the body image perceived by women. There were 25 women that attended sessions of each modality six different times. The modalities consisted of interval circuit training,

resistance training, and an aerobic session. There was a control group that consisted of the participants reading quietly for 40 minutes. Variables measured before and after the experimental group attended their training were “state body image, positive mood, and negative mood” (Hubbard, 2013). Results showed that the aerobic and resistance training sessions showed an increase in state body image between the times of pre session to post session. These two modalities also showed an increase in positive mood from negative mood after the training. Resistance training was the modality that showed the largest difference and improved the perceived body image of that women had. Frost and Mckelvie (2004) took a group of students from elementary school, high school, and university students were taken as a sample and categorized into high and low exercisers. The study measured global self-esteem, body satisfaction, and body build by using the scales of Culture-Free Self- Esteem Inventory, Body Cathexis Scale, Nine-Figure Silhouette Scale and BMI. The study overall showed that the highly active students were the ones who had a higher self-esteem despite sex and age of all the participants. Results also showed that males who were more active showed bigger body build and greater body satisfaction as showed on the Body Cathexis, than the less active male students. A study done by Mansfield (2012) looked at the relationship of mass media and body esteem and body dissatisfaction. This study looked at 90 participants, male and female, and used a survey to measure self-esteem and body esteem. Results showed that females were most influenced by the media revealing lower body esteem than males however were still influenced by mass media and showed low levels of body esteem and body dissatisfaction. It should be noted that this study used the Rosenberg Self-esteem Scale, the Social Comparison Scale, and the Body Esteem Scale. With data analysis males and females were placed together and all data was placed into SPSS 18.

**Group Fitness**

When it comes to group fitness there is some discretion whether it is more effective than working out alone. In the article, *Benefits of Group Exercise (2016)*, Dolan goes on to give his readers the benefits of group exercise and several misconceptions some may have of it. He describes group exercise as “exercise performed by a group of individuals led by an instructor” (Dolan, 2016). He states that group exercise can be beneficial to those wanting to try new things and to get out of their comfort zone although these classes can be limited by the facility that is attended. He states that several benefits of attending group fitness sessions are that the workout is already planned and structured for you and you will be steered clear of anything unsafe, depending on how well the instructor is trained of course. Dolan states that many stop their workout regiments due to boredom but with attending group exercise these classes will have format changes and fun and exciting music and environments for participants to engage in. He claims that it is good for those who are less knowledgeable or dedicated to working out due to the fact that sometimes crucial parts of a workout can be overlooked and left out and with a group fitness program everything is already laid out and you merely have to show up. Several classes are also offered in shorter time periods of 45 or even 20 minutes which is beneficial to those who have very little time in their day. When discussing group fitness classes, it may be confusing to determine which class will give off the most benefits. Salamuddin, Harun, and Al-Rashed (2014) took female students and placed them into an exercise program to see which modality of group fitness would effect and boost their self-esteem the most. The purpose of this study was to compare self-esteem levels with the different modalities of group fitness classes. 120 female students who did not exercise regularly, less than twice a week, and were divided into groups where they would participate in either walking and jogging, aerobic step and dance, aerobic step and dance with weight training, and a control group who did not participate in any

exercise activity. The participants attended their exercise class four times a week for 60 minutes for 12 weeks. The Rosenberg Self-Esteem questionnaire was given to the participants before and after the study was conducted. Results showed that the two groups that involved aerobic step and dance showed the most self-esteem boost among the females. Dehghanfar, Alicheshmealace, and Noorbakhsh (2014) followed male students through 8 weeks of yoga training. The scales used were the Rosenberg Self-Esteem Inventory, DASS 21 inventory, and MSEIS (2005) to measure these variables. In total, 277 participants were used in this study. Of the 277, it was evaluated which students had the highest stress levels and the lowest levels of self-esteem. There were 52 in total and they were then divided into control and experimental groups with the experimental having to attend a yoga class twice a week for two months that lasted 60 minutes long. Results showed that there was a positive relationship between yoga and self-esteem, stress, and emotional intelligence. These variables were significantly lower than that of the control group. Mackey (2013) evaluated data from 35 (originally 86 but failed to complete study), students who participated in group exercise classes at the university. After students participated in classes for 6 weeks they completed a series of surveys to measure “self-objectification, reasons for exercise, body awareness, body responsiveness, and body esteem” (Mackey, 2013), and how the student’s levels have changed from before taking the exercise classes. Participants who participated in the yoga format of group classes showed larger levels of happiness and positive moods than other modalities. Those who claimed to exercise for appearance related reasons showed decreased levels of self-objectification after the course of taking the group classes, regardless of the modality that was taken. Those participants who had higher “appearance related reasons for exercise” showed results of increased levels of “appearance related body self-esteem” (Mackey, 2013). In a literature review done by Harvey (2012), Most of the studies reviewed focused on

physiological aspects of exercise benefits and how they affect the body physically. Several studies show that yoga significantly decreases blood pressure and increases mental health.

“Various studies showed that yoga can significantly reduce blood pressure and heart rate (Damodaran, Malathi, Patil, Shah, & Marathe, 202; Jayasinghe, 2004; Ross & Thomas, 2010)”

This shows that there is something about the modality of yoga that gives participants long lasting benefits. One study found by Harvey was by Bartholomew and Miller (2002) who took data from 204 women who participated in an aerobic dance class. They looked at the relationship between RPE and enjoyment in the class and found a positive correlation. They found that there was an increase affective benefits of exercise after the course was completed. It was stated that positive feelings towards the class and during participation of the class can lead to increased participation in other fitness programs as well as adherence. Relating to Harvey (2012), Palmer (1995) looked at both physiological and psychological factors in exercise. This study specifically looked at 27 premenopausal women that were placed in a walking program. Their blood pressure, self-esteem, depression, resting heart rate, time walked, and attributional styles were measured and compared to the control group that did not participate in the walking program. Results showed that the walking group had improved time in the mile that was walked, improved diastolic blood pressure and improved levels of self-esteem. Nieri and Hughes (2016) conducted a study on the views of the group fitness class modality of Zumba. The purpose of this study was to gather the subjective views of Zumba, a group fitness dance modality, from women who had taken Zumba for any length of time within the last year. Their sample included 41 women who were interviewed and asked about their experience and views of the class. Results showed that majority of their participants used the word “fun” when describing Zumba while describing other types of exercise as “stressful”. Interestingly enough, when interviewers asked their participants to

compare Zumba to other group fitness classes, several participants claimed that they felt “less pressure on them to keep up with the group”. Participants also claimed that when it came to choosing Zumba over other fitness classes, the natural feeling of Zumba when with other people and also the pain experience was much less than other forms of fitness, specifically for those with previous or current injuries. Overall, majority of participants claimed a positive experience for a variety of reasons. Another study conducted by Ljubojevic, Jovanovic, Zrnic, and Sebic (2016) also took the group exercise modality of Zumba and measured the relationship between fat reduction in women who were in an 8 week program. Their sample consisted of 45 women ages 25-35 years old and had them complete a total of 24 classes in a span of 8 weeks. Researchers made sure that participants did not partake in any other form of exercise and stayed on their normal diet. Participants were tested before and after their 8-week training session. The TANITA body analyzer was used to measure body fat percentage. Results showed a positive correlation between body fat mass reduction and Zumba fitness in women. There were significant decreases in body fat mass percentage after the 8-week program. Wickham, Mullen, Whyte and Cannon (2017) took three different modalities of group fitness classes and compare the energy expenditure and heart rate responses of the participants. The modalities included the fitness class, group resistance (pump), indoor cycling (ride), and step aerobics (step). This study only had 10 participants, 5 male and 5 female, that all wore a monitor that measured their heart rate and energy expenditure to each class that they completed in random order. Their method of data analysis was using a “one way repeated measures incorporating a latin square design for class randomization”. Results shows that the aerobic and indoor cycle class had significantly higher heart rate and energy expenditure numbers than the resistance class showed.

## Personality

Altena (2011) as a short excerpt in “Making Exercise Fun” by the *American College of Sports Medicine Fit Society* page discussing exercising with a group and how it can be beneficial. He states that with a group everyone has a common goal they are working towards. He says it can create “companionship and accountability”. If there is lack of motivation in individuals who try to work out alone then social interaction and competition may help the motivation. He states it depends on the person because some people find solitude in listening to music. Tolea et. Al. (2012) did an ongoing longitudinal study that took 1220 participants from the ages 20-94 to look at the relationship between personality traits, muscle strength, and physical activity level. In order to test for muscle strength, the strength of the muscles in the knee were measured to refer to strength normalized for weight. Personality traits were measured using the NEO test to test for personality traits often referred to as the Big 5. Physical activity was assessed by self-report of the participants. Results showed that there was a negative correlation between neuroticism and muscle strength and a positive correlation in extraversion and muscle strength. With neuroticism there was high levels of anxiety, depression, and self-consciousness while with extraversion there are high levels of warmth, activity, and positive emotions. This shows that personality could possibly play a role in the way a person feels about a certain workout setting or format. A study done by Coquart et. al. (2012) showed the opposite results as the previous study. The purpose of the study was to measure several psychological factors as well as time limit estimation by teloanticipation while increasing RPE in participants who were cycling. The psychological factors this study measured were,” anxiety, extraversion-introversion, neuroticism-stability, self-esteem, motivation, psychological resistance and endurance, desire for success, social desirability, dynamism, competitiveness, activity control, risk-taking, emotional control, aggressiveness, sociability, cooperation, acceptance of a judgment, and leadership”. The



scales used were the Borg RPE scale, estimated time limit scale, Spielberger's state-trait inventory scale, Eysenck personality Inventory, and the sports motivation scale. Results showed that there was no correlation between anxiety and RPE/ETL. This study also suggests that RPE during the workout has no relation to extraversion. This article states several other studies, such as Morgan (1973, 1994), where neuroticism is linked to higher RPE during the work out. One interesting study looked at the way the instructor's teaching style effects the participants.

Ntoumanis, Thogersen-Ntoumani, Quested, and Hancox (2016) looked to create communication and motivational training for instructors and to see how it influenced the instructors, their participants and the class itself. 23 cycle instructors and 321 participants, ranging from 18-78 years old, were involved in the study. 246 provided data in the first round of collection and 88 provided data in the second round. The experimental group participated in workshops that helped build the instructors training and certification and gave techniques to get their participants motivated and communicating with them. The control group did not attend these workshops however they were allowed to access online material. The study showed that the exerciser's view on the instructors changed to where they noticed the instructors use of controlling strategies decreased and interpersonal involvement increased. No changes were found in the exerciser's motivation. Exercisers showed stronger intentions to participate in future classes. This study shows that "SDT-based communication training can change perceptions of the degree of both adaptive and maladaptive behaviors displayed by fitness instructors" (Ntoumanis et al., 2016). It was stated from another article cited in this study that "It is not uncommon for exercise instruction to adopt a "no-pain, no-gain" mentality, often driven by the assumption that more controlling, pressurizing environments will be more likely to make class attendees work hard (Edmunds et al., 2008; Hancox et al., 2015a, b); Ntoumanis et al., 2016).

**Rate of Perceived Exertion**

Plante, Coscarelli, and Ford (2001) demonstrate with their study if exercising with another can enhance the stress-reducing benefits of exercise. This study took 136 male and female participants who completed a 30-minute cycle workout. The participants were placed into groups where some would complete the workout alone, with another person while talking, or with another person in silence. They were asked to fill out a questionnaire before, after, and later that evening during the day of the workout. The scales used were the Perceived Physical Fitness Scale, Marlowe Crowne Social Desirability Scale and the Activation-Deactivation Adjective Check List. They used these to measure the variables of the perception of physical fitness, social desirability or defensiveness, and momentary mood states in order to see if working out with someone will reduce the stress of working out. Results showed that there was a greater impact on the reduction in stress for those participants who worked out with others rather than alone. There was a positive relationship between those who worked out with another and their levels of stress-reducing benefits. This study also found that those who worked out with another had increased levels of tiredness after the session regardless of if they talked with the person or not.

Researchers also measured to make sure their study was reliable by measuring the relationship between exercise and stress-reducing benefits showing there was a positive relationship. In a similar study by Plante et al. (2010) the effects of the fitness level of the workout partner was compared to the rate of perceived exertion given by the individual. This study examined 91 students enrolled in college and had three groups which consisted of having several exercising on the bike alone, biking with a highly conditioned partner, or biking with a lower conditioned partner. The exercise consisted of 20 minutes of biking at a range of 60-70% in their maximum target heart rate. The study showed that those in the group would exercise to the level of the partner that was with them and the solo bikers indicated that they felt calm and relaxed. The

scales used in this study were the Activation-Deactivation Adjective Check List, Perceived Exertion Scale (Borg), Paces Activity Enjoyment Scale, and several scales that were developed by the authors themselves.

### **Motivation**

DeLong (2006) looked at a sample of 277 participants that were male and female who were enrolled in a required physical activity class at the university. Researchers used the scales of Behavioral Regulation in Exercise Questionnaire, Motives For Physical Activity Measure-Revised, Physical Activity Stages of Change Questionnaire, the Decisional Balance Scale, Physical Exercise Self-Efficiency scale, and Weekly Leisure Time Exercise Questionnaire. In this study the purpose was to use the ideals of the self-determination theory and the trans theoretical model to find out and look at the motives of physical activity in college students as well as looking at how effective required physical activity classes are on the “students’ levels of physical activity” (DeLong (2006). The study used an online survey and data was collected for two months. Results showed that for a casual week Physical activity increased for students who were in the maintenance stage while those in the precontemplation/contemplation stage also increased but were less active. The study also showed that those students who were categorized in the action and maintenance were higher in self-determination than precontemplation/contemplation students. This group was also lowest in self-efficiency. It was found that decisional balance was a predictor of self-determination. Lastly, the study found that there were no differences in the groups of students who took and who did not take the classes when it came to the levels of self-determination, decisional balance, self-efficacy, stages of change and reported physical activity. Kilpatrick, Herbert, and Bartholomew (2005) took a total of 233 male and female students that were enrolled in the University’s health and physical activity classes to be used as a sample in this study. A survey was handed out during class time

and took only an average of 10 minutes to complete. The scales used were 2 modified versions of the EMI-2. Results showed that participants who were discussing engaging in sports were more likely to express intrinsic motives while those who were discussing exercising and the motivations for it were extrinsic and weight and appearance were stressed. The researchers state that, “the findings suggest that motives for sport participation are more desirable than those for exercise and may facilitate improved adherence to physical activity recommendation” (Kilpatrick, Herbert, & Bartholomew, 2005). In a study with a bigger sample size, Molanorouzi, Khoo, and Morris (2015) took 1,360 male and females from the ages of 20-64 and had them divided into groups of young adults (20-40) and middle aged (41-64). It was the researcher’s intentions to measure whether participation in physical activity could discriminate age, gender, or type of physical activity. They participated in five different types of physical activity which included, “individual racing sports plus bowls, team sports, racquet sports, martial arts, and exercise”. They participated in the physical activity for 2.85 sessions a week for 4 weeks with each class lasting about an hour. The physical activity and leisure motivation scale was used to measure motives for physical activity in this sample of people who had been exercising regularly for at least 6 months. Results showed that females were higher in “motivation for appearance and physical condition” where males were higher in “competition/ego and mastery” (Molanorouzi, Khoo & Morris, 2015). The young adult group reported higher in “affiliation, mastery, and enjoyment associated with participation” where middle aged adults were higher in “physiological condition and others’ expectations” (Molanorouzi, Khoo & Morris, 2015). When only looking at females, Turke (2012) took 688 email participants completed this study through an online survey that was distributed to measure the relationship between physical activity levels and self-esteem and how motivations might play a role in the relationship. The age of females ranged from 18-

24. The scales International Physical Activity Questionnaire, Motives for Physical Activities Measure- Revised, and the Rosenberg Self-Esteem Scale were used. Majority of the participants were classified as participating in moderately low activity as classified by the guidelines of the CDC. Majority of the participants claimed to participate in running the most for fitness activity participation and tennis the most for individual sport participation, soccer was highest in team sport participation as well. Results showed that women were largely influenced by their loved ones, if their loved ones worked out then they would be motivated to do so as well or if they were pressured by them to work out they would. Results also show that for college women, they are more motivated to work out if they are with a friend or others. This study shows that society is a big influence on making women feel the need to shape and work their bodies a certain way. Overall, appearance factors are what motivates women to work out the most. The study states that as appearance motivation levels increase, self-esteem levels decrease. There is a positive relationship between participation in physical activity and appearance motivation levels. There was no relationship between physical activity participation and self-esteem.

### **Conclusion**

Many studies have been successful in showing the relationship between different types of fitness modalities and the psychological and physiological effects they cause. However, few have taken notice to the fitness setting, whether its exercising with a group or exercising alone. It has also been challenging finding research that compares these two settings. The current study was conducted to add to the literature as well as to help the RAC at Georgia Southern University see how fitness setting are possibly effecting the students, taking into account the many other variables. It can be seen by the results of the current study that Self-esteem, body image, and motives for physical activity shows no significant difference in college students of both male and females engaging in group exercise classes or solo exercises. It would be beneficial for future

research to complete a similar study but with also measuring the specific type of solo or group exercise. This would help clear up or connect any previous research with the current study.

Future research should be conducted to look specifically at different types of group exercise modalities, such as dance, Pilates, yoga, barre etc. and measure psychological and physiological variables for that specific modality. This way, instructors will have more research to back up their type of exercise modality that is being taught. This may also encourage newcomers to try different types of exercise routines they are unfamiliar with as well as bring in new populations who relate to the research that is found. An interesting question to be asked would be comparing relationship status with physical activity level and measuring if those who are single are more likely to workout versus those who are in a relationship.

If another study similar were to be conducted, looking at what other forms of exercise the participant performs outside the designated facility might be linked to the high psychological variables measured. More research should be conducted to find out how each gender is motivated and why.

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# Running Head: Fitness Setting Comparison

*Table 1*

Descriptive Statistics- Male and Female

<b>Frequency(%)</b>						
	Total	Male		Female		
<b>Race</b>						
Black, Non-Hispanic	25	19.8%	6	19.4%	19	20%
Hispanic	2	1.6%	0	0%	2	2.1%
White, Non-Hispanic	88	69.8%	19	61.3%	69	72.6%
Non-resident alien	1	.8%	0	0%	1	1.1%
Other/Unknown	2	1.6%	1	3.2%	1	1.1%
Multiracial	8	6.3%	5	16.1%	3	3.2%
<b>Year</b>						
Freshman	10	7.9%	0	0%	10	10.5%
Sophomore	20	15.9%	2	6.5%	18	18.9%
Junior	29	23.0%	6	19.4%	23	24.2%
Senior	67	53.2%	23	74.2%	44	46.3%
<b>Relationship</b>						
Single, not married	96	76.2%	26	83.9%	70	73.7%
Married	1	.8%	0	0%	1	1.1%
Living with partner	7	5.6%	0	0%	7	7.4%
Not single, not married	21	16.7%	5	16.1%	16	16.8%
Prefer not to answer	1	.8%	0	0%	1	1.1%
<b>Days a week spent at RAC</b>						
0-2	53	42.1%	7	22.6%	46	48.4%
2-4	37	29.4%	8	25.8%	29	30.5%
4-6	27	21.4%	11	35.3%	16	16.8%
6+	9	7.1%	5	16.1%	4	4.2%
<b>Physical activity level</b>						
Physically inactive (1 day a week)	4	3.2%	0	0%	4	4.2%
Slightly physically active (1-2 days)	35	27.8%	2	6.5%	33	34.7%
Moderately physically active (3-5 days)	51	40.5%	12	38.7%	39	41.1%

Very physically active (5-7 days)	36	28.6%	17	54.8%	19	20.0%
<b>Hours of sleep</b>						
3-6	31	24.6%	6	19.4%	25	26.3%
3	1	.8%	0	0%	1	1.1%
6-9	93	73.8%	25	80.6%	68	71.6%
9+	1	.8%	0	0%	1	1.1%
<b>Exercise modality</b>						
Group exercise	40	31.7%	0	0%	40	42.1%
Solo	86	68.3%	31	100%	55	57.9%
<b>Total</b>	<b>126</b>	<b>100%</b>	<b>31</b>	<b>24.6%</b>	<b>95</b>	<b>75.4%</b>

Table 2

Mean and Standard Deviation of Males and Females

	<u>Male</u>		<u>Female</u>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<b>Age</b>	21.71	1.59	20.25	1.45
<b>RSES Total</b>	29.52	3.35	27.94	4.09
<b>PC</b>	50.65	8.38	31.44	6.17
<b>PA-Male</b> <b>SA-Female</b>	42.52	7.86	48.16	7.20
<b>UBS-Male</b> <b>WC-Female</b>	35.71	5.91	32.19	7.69
<b>Interest- Enjoyment</b>	5.93	1.11	5.30	1.19
<b>Competence</b>	5.78	1.42	5.36	1.24
<b>Appearance</b>	5.88	.85	5.88	.92
<b>Fitness</b>	6.18	.94	6.09	.78
<b>Social</b>	4.40	1.65	4.22	1.44
<b>Valid N(Total)</b>	<b>31</b>		<b>95</b>	

Table 3

Mean and Standard Deviation of Outcomes-Female

	<u>Group Exercise</u>			<u>Solo</u>		
	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>
<b>RSES Total</b>	27.58	4.38	40	28.21	3.88	55
<b>Interest- Enjoyment</b>	5.19	1.25	40	5.39	1.14	55
<b>Competence</b>	5.22	1.36	40	5.47	1.15	55
<b>Appearance</b>	5.70	1.11	40	6.01	.73	55
<b>Fitness</b>	6.07	.82	40	6.10	.76	55
<b>Social</b>	4.45	1.36	40	4.05	1.48	55
<b>PC</b>	30.43	6.38	40	32.18	5.97	55
<b>SA</b>	47.93	7.29	40	48.33	7.19	55
<b>WC</b>	32.45	8.32	40	32.00	7.27	55